

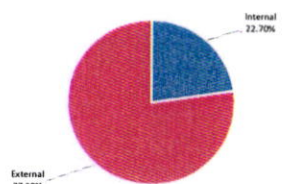
MBOI Snapshot

As of 6/30/2017

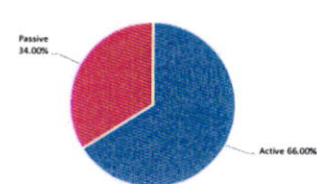
(Unaudited)

Row Labels	Market Value	%
CAPP CONS ASSET PENSION POOL	\$10,636,933,650	66.80%
SHORT TERM INVESTMENT POOL	\$2,951,617,376	18.54%
TRUST FUNDS INVESTMENT POOL	\$2,334,307,333	14.66%
Grand Total	\$15,922,858,359	100.00%

Pension Internal/External



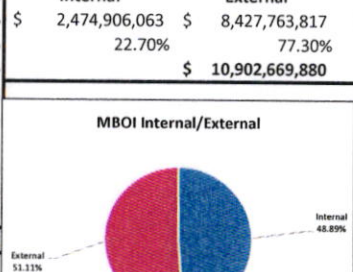
Pension Active/Passive



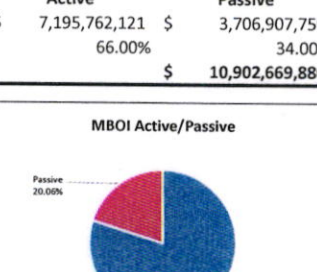
Pension by Plan	Market Value	%
PUBLIC EMPLOYEES' RETIREMENT2	\$5,456,647,596	50.05%
TEACHERS' RETIREMENT	\$3,918,700,557	35.94%
FIREFIGHTERS' RETIREMENT	\$380,437,065	3.49%
POLICE RETIREMENT	\$369,615,681	3.39%
SHERRIF'S RETIREMENT	\$330,254,686	3.03%
GAME WARDEN'S RETIREMENT	\$175,141,533	1.61%
HIGHWAY PATROL RETIREMENT	\$139,371,985	1.28%
JUDGES' RETIREMENT	\$96,170,524	0.88%
VOL. FIREMANS' RETIREMENT	\$36,330,254	0.33%
Total	\$10,902,669,880	100.00%

Top Ten Non-Pension Accounts	Market Value	%
STATE FUND INSURANCE	\$1,490,773,731	30.50%
TREASURERS	\$813,212,359	16.64%
TRUST AND LEGACY ACCOUNT	\$701,082,982	14.34%
PERMANENT COAL TRUST FUND	\$570,995,519	11.68%
OTHER AGENCIES	\$437,805,534	8.96%
TREASURE STATE ENDOWMENT	\$286,618,676	5.86%
TOBACCO TRUST FUND	\$221,857,480	4.54%
MONTANA STATE UNIVERSITY	\$133,749,157	2.74%
UCFRB RESTORATION FUND	\$119,174,869	2.44%
RESOURCE INDEMNITY TRUST	\$112,106,872	2.29%
Total	\$4,887,377,179	100.00%

MBOI Internal/External



MBOI Active/Passive



Internal	External	Active	Passive
\$ 2,474,906,063	\$ 8,427,763,817	\$ 7,195,762,121	\$ 3,706,907,759
22.70%	77.30%	66.00%	34.00%
\$ 10,902,669,880		\$ 10,902,669,880	

Internal	External	Active	Passive
\$ 8,604,540,405	\$ 8,995,255,883	\$ 14,069,277,153	\$ 3,530,519,135.45
48.89%	51.11%	79.94%	20.06%
\$ 17,599,796,288		\$ 17,599,796,288	

Coal Tax Trust	Market Value	%
BIG SKY ECON DEV FD	\$99,389,738	9.41%
TRUST FUNDS INVESTMENT POOL	\$98,126,349	9.29%
SHORT TERM INVESTMENT POOL	\$1,263,389	0.12%
PERMANENT COAL TRUST FUND	\$570,995,519	54.06%
TRUST FUNDS INVESTMENT POOL	\$385,499,226	36.49%
IN STATE LOANS	\$127,776,719	12.10%
VHLM Mortgage	\$32,635,702	3.09%
SHORT TERM INVESTMENT POOL	\$25,083,872	2.37%
TREASURE ST. REG. WATER SYSTEM	\$99,315,523	9.40%
TRUST FUNDS INVESTMENT POOL	\$98,745,553	9.35%
SHORT TERM INVESTMENT POOL	\$569,970	0.05%
TREASURE STATE ENDOWMENT	\$286,618,676	27.13%
TRUST FUNDS INVESTMENT POOL	\$284,913,784	26.97%
SHORT TERM INVESTMENT POOL	\$1,493,445	0.14%
IN STATE LOANS	\$211,447	0.02%
Total	\$1,056,319,456	100.00%

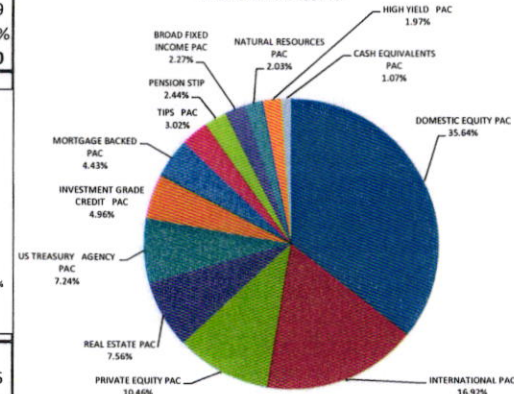
Intercap Statistics

Loans Outstanding	\$ 94,690,437
Bonds Outstanding	\$ 107,880,000
Number of Borrowers	205
Loan Rate	2.50%

STIP

Account	# Accounts	Total Market Value	%
Total State	321	\$ 1,928,613,871	65.12%
Total Local	163	\$ 1,032,885,895	34.88%
Total STIP	484	\$ 2,961,499,766	100.00%
Average Current Month STIP Yield		1.0814%	

PENSIONS BY ASSETS



Asset Classes	Market Value	%
DOMESTIC EQUITY PAC	\$3,885,903,235	35.64%
INTERNATIONAL PAC	\$1,844,865,342	16.92%
PRIVATE EQUITY PAC	\$1,140,212,817	10.46%
REAL ESTATE PAC	\$823,743,713	7.56%
US TREASURY AGENCY PAC	\$789,417,692	7.24%
INVESTMENT GRADE CREDIT PAC	\$540,542,501	4.96%
MORTGAGE BACKED PAC	\$482,495,676	4.43%
TIPS PAC	\$329,559,871	3.02%
PENSION STIP	\$265,736,274	2.44%
BROAD FIXED INCOME PAC	\$247,020,579	2.27%
NATURAL RESOURCES PAC	\$221,217,286	2.03%
HIGH YIELD PAC	\$215,242,315	1.97%
CASH EQUIVALENTS PAC	\$116,712,579	1.07%
Total	\$10,902,669,880	100.00%

PUBLIC EMPLOYEES RETIREMENT PLAN *

SUMMARY OF POSITIONS AND RETURNS

June 30, 2017



Allocation	MARKET VALUE \$(000)	ALLOCATION (%)
PUBLIC EMPLOYEES RETIREMENT PLAN	5,456,776	100.0
SHORT TERM INVESTMENT POOL	130,617	2.4
CONSOLIDATED ASSET PENSION POOL (CAPP)	5,326,159	97.6

Returns	MONTH	3 Months	FYTD	1 Year	3 Years	5 Years	10 Years	Inception To Date	INCEPTION DATE
PUBLIC EMPLOYEES RETIREMENT PLAN	0.50	3.03	11.94	11.94	6.12	9.62	5.33	7.70	07/01/1994
SHORT TERM INVESTMENT POOL	0.09	0.26	0.83	0.83	0.45	0.35	0.85		04/01/1990
CONSOLIDATED ASSET PENSION POOL (CAPP)	0.50	3.13						3.13	04/01/2017
PUBLIC EMPLOYEES CUSTOM BENCHMARK ¹	0.70	2.55	11.95	11.95	6.58	10.05	5.65		12/01/1993
LIBOR 1 MONTH (DAILY)	0.10	0.27	0.78	0.78	0.43	0.33	0.78		01/01/1997
CAPP CUSTOM BENCHMARK ²	0.71	2.62							04/01/2017

PUBLIC EMPLOYEES RETIREMENT PLAN *

SUMMARY OF POSITIONS AND RETURNS

June 30, 2017



Endnotes

* Net All

1 From inception to 3/31/2017:

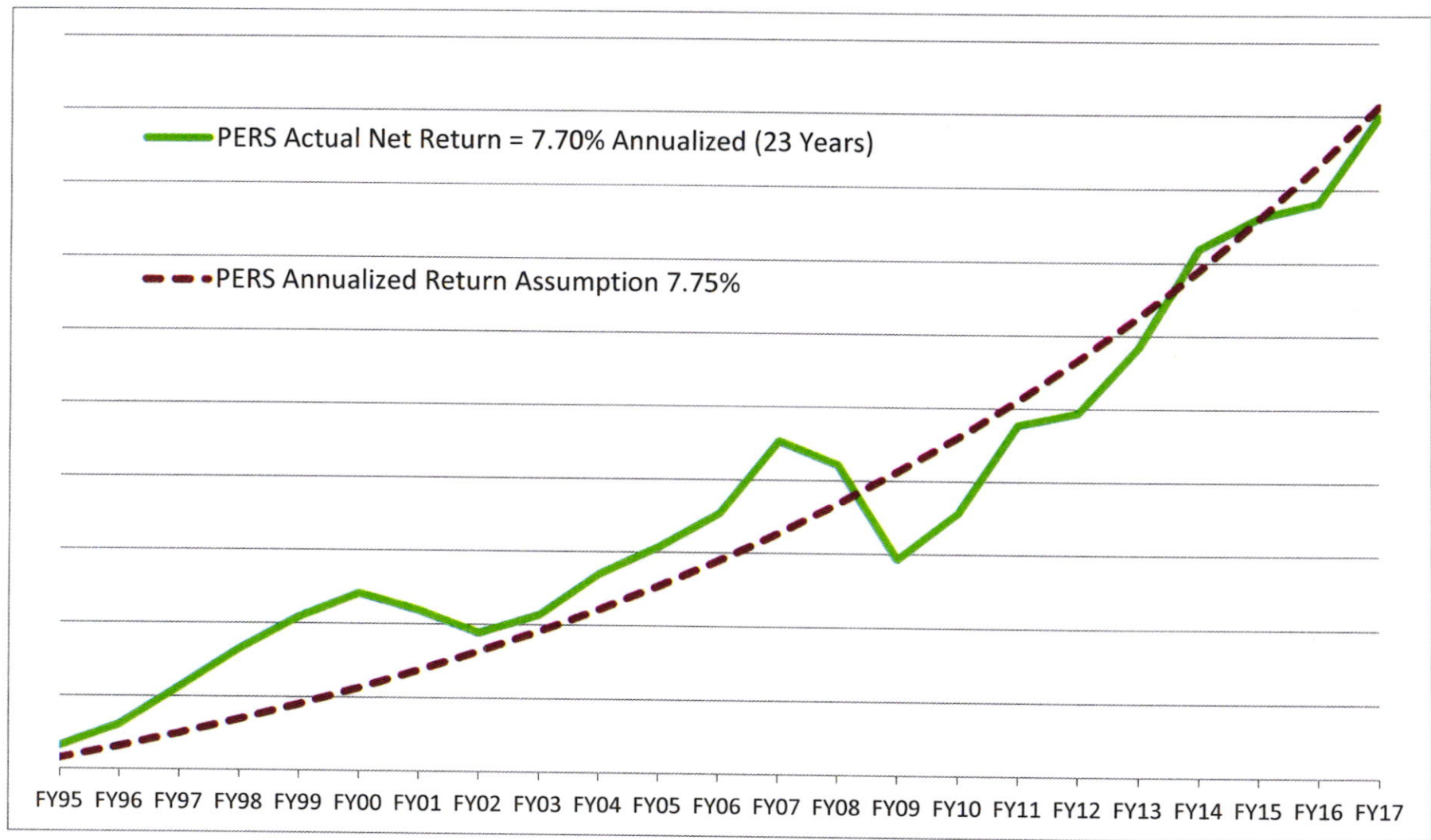
The portfolio weighted average of S&P 1500 Super Composite, MSCI ACWI ex US IMI Net, S&P 1500 + 4% Qtr Lag, LIBOR 1 Month, BBG BARC US Agg, and NCREIF ODCE 1 Qtr Lag (Net)

From 4/1/2017 to present:

Equity and Cash Equivalents weighted average of CAPP Custom Benchmark and LIBOR 1 Month (Daily)

2 From inception to present:

The portfolio weighted average of MSCI US IMI Gross, MSCI ACWI ex US IMI Net, MSCI AC World Commodity Prod Net, BBG Barclays US Intermediate TIPS, BBG BARC Tsy Int, BBG BARC US Corp Int Inv Grd Idx, BBG BARC US MBS Idx, BBG BARC US HY - 2% Issr Cap, MSCI US REIT INDEX GROSS, MSCI USA Small Cap Gross, BBG BARC US Agg, LIBOR 1 Month



TRS Cash Flow Analysis

November, 2016

Joe Cullen, CFA, CAIA, FRM

Dan Zarling, CFA

Eron Krpan, CIPM

Cash Flow Analysis

- Prior Years CF analysis
 - Aggregated PERS & TRS cash flows
 - Considered implied asset sales rather than total distributions
 - Focused on a 5 year rather 10 year cash flow analysis
- Going forward each plan will have their own cash flow analysis
 - All 9 plans have different Net Cash Needs (NCN) and funded ratios.
 - As we progress, asset allocation may be individualized for the unique needs and risk characteristic of each plan.
- As an example, TRS will be the subject of this presentation
 - Their NCN (as a % of assets) is the largest of all 9 plans

Excerpts from Actuarial Valuation

As of July 1, 2016

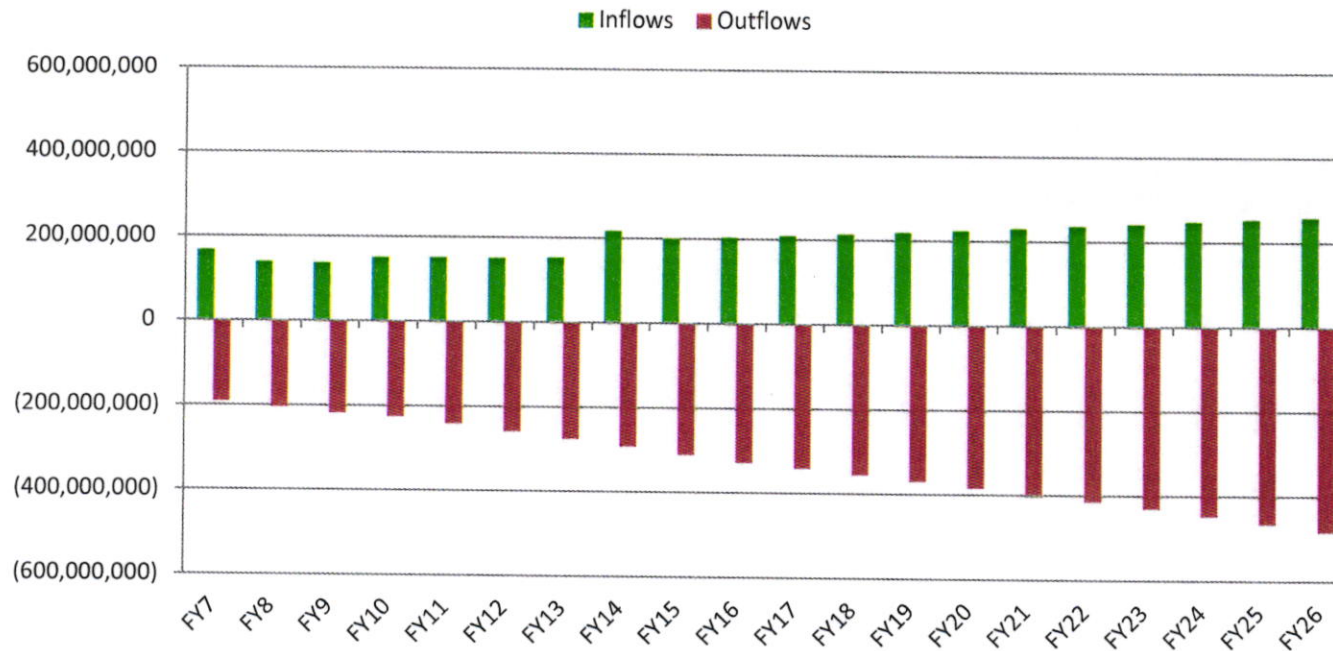
Done by: Cavanaugh Macdonald Consulting, LLC

- “The investment return generally has the largest impact on the funding of the system”
 - If the amortization period is > 30 years, the actuary will recommend a contribution rate increase
- If the market value of assets were used
 - Funded Ratio: 66.7%
 - Amortization Period: 28 Years
- Investment Return Assumption Scenarios
 - 7.75% (Current)
 - Funded Ratio: 69.3%
 - Amortization Period: 24 Years
 - 7.25%
 - Funded Ratio: 65.7%
 - Amortization Period: 34 Years
 - 6.75%
 - Funded Ratio: 62.2%
 - Amortization Period: 51 Years

Why is there a NCN?

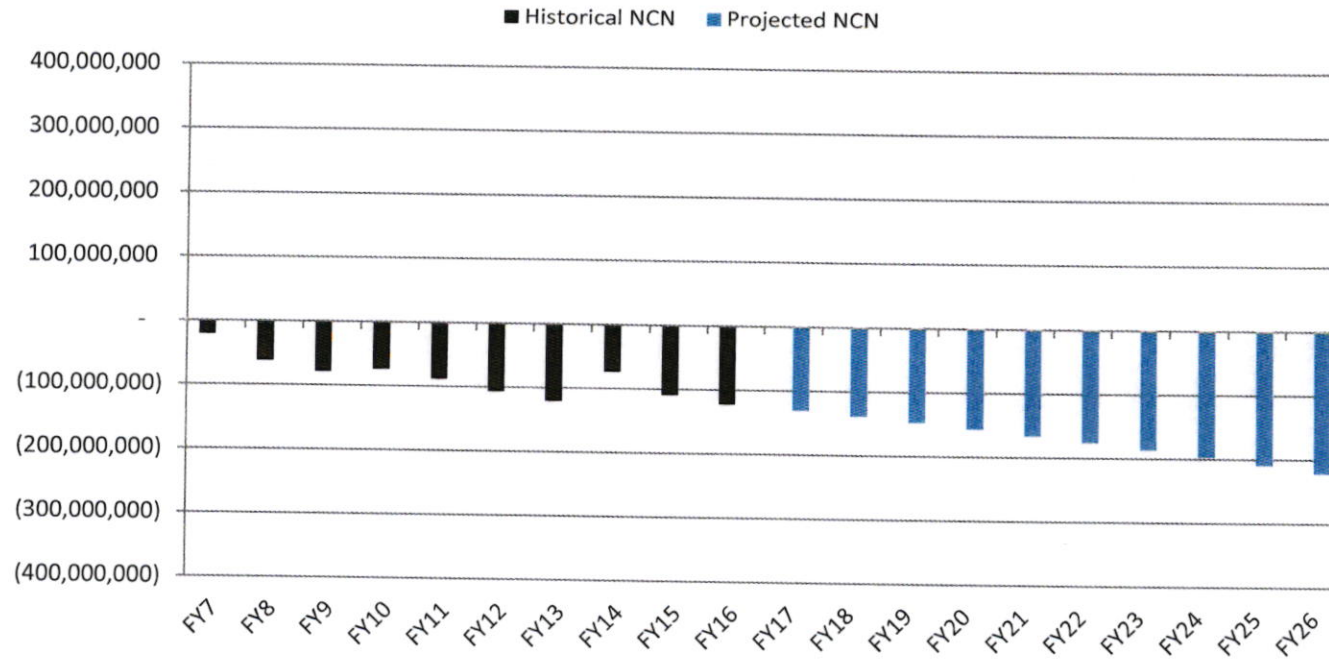
- The plan is mature. There are more retirees than full-time contributing members.
 - As of 7/1/2016 there were 12,769 full-time contributing members and 15,164 retired members and beneficiaries
- Pensioners are living longer lives causing benefit outflows to be larger than expected.

Inflows & Outflows Historical & Projected (Shaded area indicates projection)



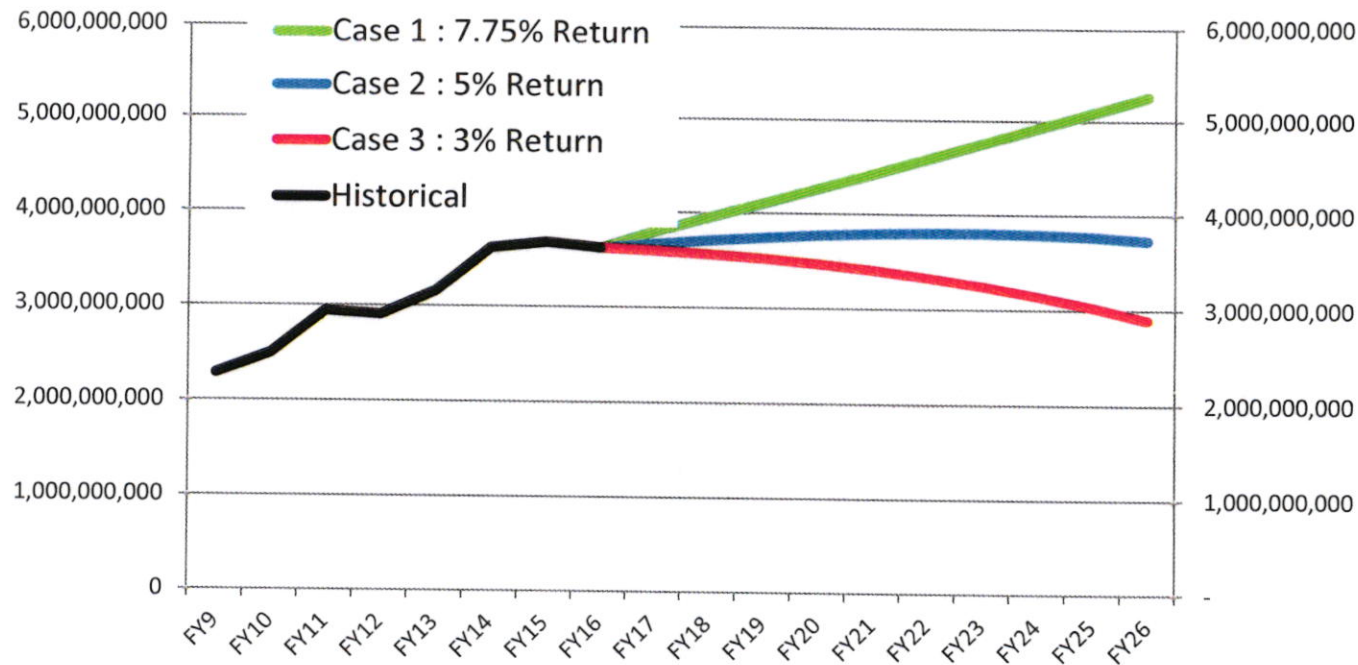
- Inflows are expected to grow at around 2.5% per year for the next 10 years
- Outflows are expected to grow at around 4% per year for the next 10 years

TRS Net Cash Need **Historical & Projected** (Shaded area indicates projection)



- Net Cash Need (NCN) is the net amount of inflows and outflows.
- NCN is expected to grow at around 6% per year for the next 10 years
- Liquidity management will be an increasingly important consideration in the asset allocation of this plan.

TRS Ending FY Assets **Historical & Projected** (Shaded area indicates projection)

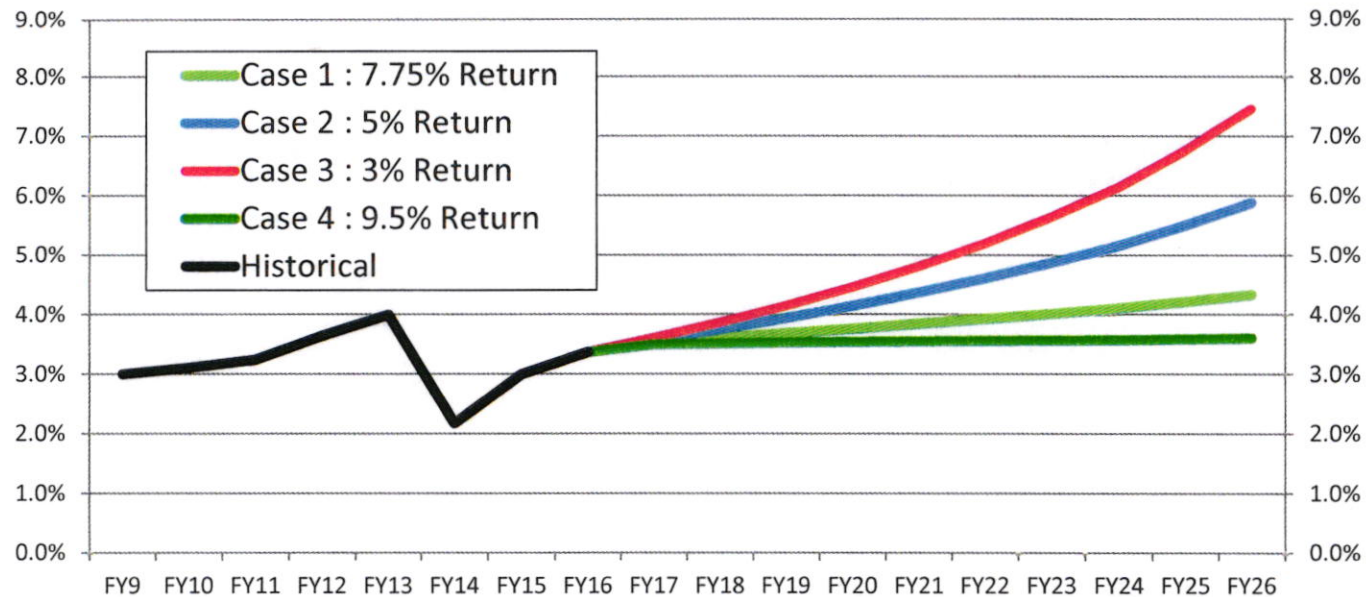


- Returns are assumed to be the same each year, without variation, in their respective scenarios
- It would take about a 5% annual return to keep the plan assets close to where they are now with respect to the market value of TRS plan assets

TRS Sensitivity Analysis - Constant Returns

NCN as % of Average FY Assets

(Shaded area indicates projection)

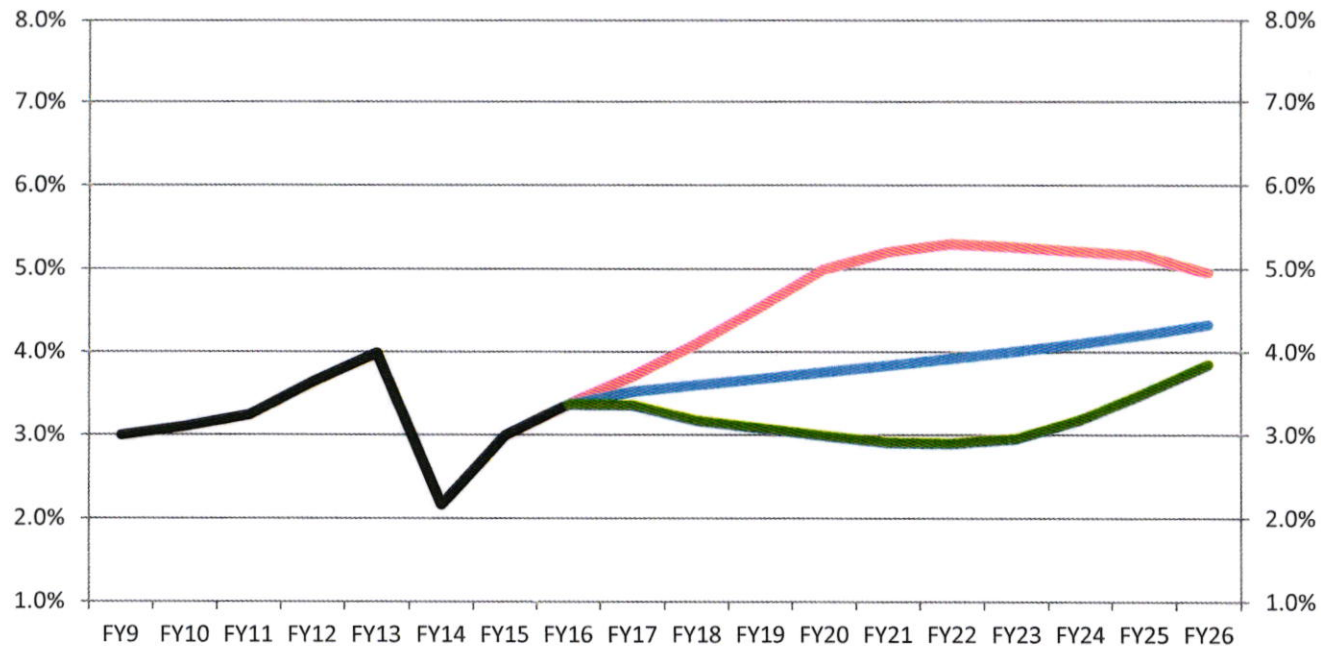


- Returns are assumed to be the same each year, without variation, in their respective scenarios
- NCN is expected to grow at 6% annually over the next ten years.
- TRS would need to generate an even return of about 9.5% annually (Case 4) in order to keep NCN as a % of Assets at about 3.4%.

TRS Sensitivity Analysis - Non-Constant Returns

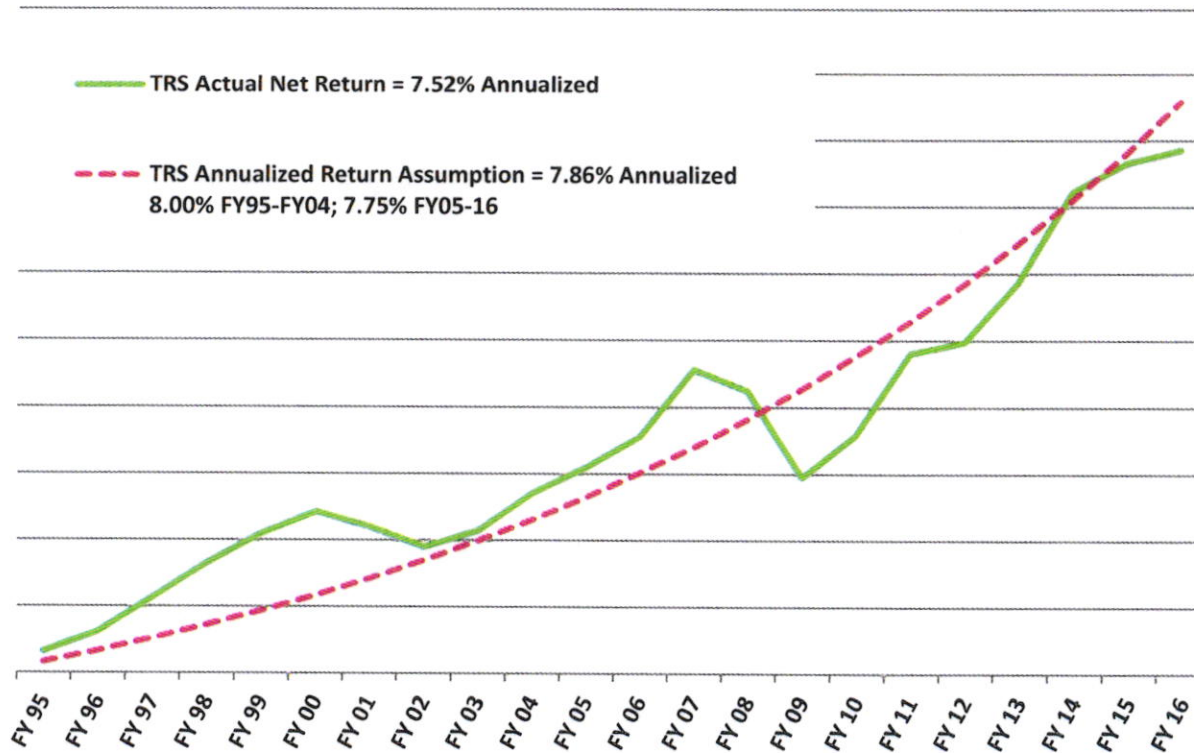
NCN as % of Average FY Assets

(Shaded area indicates projection)



- Returns are likely to exhibit volatility
 - Geometric Mean -> An annualized measure of compound return
 - Arithmetic Mean -> The simple average of a set of returns
- High (Low) returns in early years have a positive (negative) impact

Volatility of Historical TRS Returns



- Historical data closely tracks the actuarial assumed target rate of return over the long term

Cash Flow Analysis

Implications for Asset Allocation

- Liquidity – Short Term Cash Needs
 - Increasing Net Cash Need -> Higher Cash Levels
 - Gives us flexibility to rebalance, pay benefits, or strategically allocate to other asset classes
- Solvency – Long Term Asset Needs
 - Underfunded Status
 - Increases desire to allocate to riskier asset classes
 - Riskier asset allocations could lead to an even more underfunded status